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10/568,346

02/14/2006

Masahiko Ikawa

403586/MELCO

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LEYDIG VOIT & MAYER, LTD
700 THIRTEENTH ST. NW
SUITE 300
WASHINGTON, DC 20005-3960

EXAMINER

BERHANE, YOSIEF H

ART UNIT

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4144

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/568,346	Applicant(s) IKAWA ET AL.	
	Examiner YOSIEF BERHANE	Art Unit 4144	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 14 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>02/14/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

Application/Control Number: 10568346

Art Unit: 4144

DETAILED ACTION

1. Claims 1-16 have been examined and are pending.

Information Disclosure Statement

2. An initialed and dated copy of Applicant's IDS form 1449 submitted 02/14/2006, is attached to the instant Office action.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: **Between-Road-and-Vehicle Communication System.**

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1, 4 and 7-16** are rejected under 35 U.S.C. 102(b) as being anticipated by Non-patent Literature “Dedicated Short-Range Communication System, ARIB STANDARD, Version 1.0” (hereinafter referred to as “ARIB STD-T75”).

As per claim 1, the ARIB STD-T75 teaches a roadside-to-vehicle communication system for providing mobile stations with diverse application services (In sections, 2.3.2.1 and 2.3.1.1,

Application/Control Number: 10568346

Art Unit: 4144

the ARIB STD-T75 outlines the multiple applications and services that a communication system is able to manage. The communication system consists of a road side unit (RSU) which is installed at the road side and an On-Board Equipment(OBE) which is installed in the vehicle. See also 2.1.1, 2.1.2 and 2.1.3),

by utilizing roadside-to-vehicle communication implemented between mobile stations that travel on a road and a base station system installed along the road (In Sections 2.3.2.1 and 2.3.1.1, ARIB STD-T75 outlines the multiple applications and services that a communication system is able to manage. The communication system consists of a road side unit (RSU) which is installed at the road side and an On-Board Equipment(OBE) which is installed in the vehicle. See also 2.1.1, 2.1.2 and 2.1.3 and 2.3.),

the roadside-to-vehicle communication system comprising transfer service processing entities for providing means to implement data transfer among a plurality of applications (Section 2.3.1.1, ARIB discloses basic functions of the mobile and base station. In the section, it is disclosed that the system is capable of a duplex communication between the base station and the mobile station and is further capable of being used for multiple applications. Also see section 4.2.4.2.1.7, in which ARIB STD-T75 discloses that application identifiers are designated by applications in order to specify the types of application services provided from a base station.)

and transaction management entities for providing unidirectional data transmission and request-response-type transaction services (In sections 2.4.2, as well as 3.2.7: ARIB STD-T75 discloses the methods of data transmission which includes a one way, half-duplex communication. Furthermore, in section 2.5.1, ARIB STD-T75 discloses that a “MAC Sub-Layer, Layer Management Entity (LME) and System Management Entity (SME) of Layer 1 are

Application/Control Number: 10568346

Art Unit: 4144

used to exchange and manage service primitives of each layer. Note that service primitives are used to exchange request/response type communication. A list of service primitives are disclosed in section 4.4.3.2),

the transaction management entity comprising (Section 2.5.1, System Management Entity):

undelivered data resending means (In section 2.5.1.2, ARIB STD-T75 discloses the features of the Layer 2 structure that is adopted from the OSI model. In Layer 2, which includes the MAC Sub-layer, a service to resend data is provided. Also see, 2.5.2, under the heading, Communication Phase.);

data sending/receiving means for each of messages (In section 2.5.1.2, ARIB STD-T75 discloses the features of the Layer 2 structure that is adopted from the OSI model. In Layer 2, which includes the MAC sub-layer, a service to establish a link connection is provided (Association phase) to allow a base station and a mobile station to send and receive data. Also see, 2.5.2, under the heading, Association phase and Communication Phase.);

and message segmenting/assembling means (In section 4.3.1.2.1, ARIB STD-T75 discloses the features of the MAC sub-layer, a service for fragmenting/assembling data is disclosed.).

As per claim 4, ARIB STD-T75 teaches the roadside-to-vehicle communication system according to claim 1, wherein the transfer service processing entity notifies an application of the status of establishing wireless communication (Section 4.3.4.1.2.5, ARIB STD-T75 discloses where a primitive is passed from the LLC sub-layer to the layer-7 to indicate success or failure of a request to establish a connectionless-mode data transfer).

Application/Control Number: 10568346

Art Unit: 4144

As per claim 7, ARIB STD-T75 teaches the roadside-to-vehicle communication system according to claim 2, wherein, when the transfer service processing entity receives a message from an opposite station and when no application for a transmission destination exists in the station to which the transfer service processing entity belongs the transfer service processing entity immediately notifies of the opposite station of the fact (In Section 4.2.4.2.1.7, ARIB STD-T75 discloses where Service Application Information field is used to indicate the outline of application services provided from a base station. In the section, the ARIB STD-T75 discloses further that in the case where there is no matched application between the base station and the mobile station, the association procedure is not performed. Thus, the opposite station is immediately notified when an association procedure is not performed that an application service is not available).

As per claim 8, ARIB STD-T75 teaches the roadside-to-vehicle communication system according to claim 1, wherein, in order to identify units of a transaction, the transaction management entity utilizes an identifier designated by an application (In section 4.2.4.2.1.7, ARIB STD-T75 discloses that application identifiers are specified/designated by applications in order to specify the types of application services provided from a base station.).

As per claim 9, ARIB STD-T75 teaches the roadside-to-vehicle communication system according to claim 8, wherein the transaction management entity checks whether or not any duplicated transaction exists by means of identifiers assigned to transactions (In section, 4.2.4.2.2.1.3, ARIB STD-T75 discloses where sequence numbers are used to prevent duplicated messages),

Application/Control Number: 10568346

Art Unit: 4144

As per claim 10, ARIB STD-T75 teaches the roadside-to-vehicle communication system according to claim 8, wherein the transaction management entity aborts transactions by means of identifiers assigned to transactions (In Section 4.2.10, ARIB STD-T75 discloses where the layer 2 management entity has a timer which cancels a communication transaction in the event that the timer has elapsed).

As per claim 11, ARIB STD-T75 teaches the roadside-to-vehicle communication system according to claim 8, wherein the transaction management entity of a sending station divides an original message into a plurality of data segments (In section 4.3.1.2.1, ARIB STD-T75 discloses the features of the MAC sub-layer, a service for fragmenting/assembling data is disclosed)

and adds to each of the segments one identifier and a sequential number for transaction identifying (In section, 4.2.4.2.2.1.3, ARIB STD-T75 discloses where sequence numbers are used to prevent duplicated messages),

and wherein the transaction management entity of a receiving station reassembles into the original message the data segments whose identifiers are identical to that one identifier (In section 4.3.1.2.1, ARIB STD-T75 discloses the features of the MAC sub-layer, a service for fragmenting/assembling data is disclosed),

by determining an assembling order based on the sequential numbers (In section, 4.2.4.2.2.1.3, ARIB STD-T75 discloses a sequence number is used to identify and indicate the fragmented data transmission sequence. The Sequence number is used to make the fragmentation/de-fragmentation of data that is transmitted to and from the road side equipment and on-board equipment).

Application/Control Number: 10568346

Art Unit: 4144

As per claim 12, ARIB STD-T75 teaches the roadside-to-vehicle communication system according to claim 11, wherein, in implementing divided transmission (In section 4.3.1.2.1, ARIB STD-T75 discloses the features of the MAC sub-layer, a service for fragmenting/assembling data is disclosed),

the transaction management entity controls duration between transmissions, depending on the status of a sending queue in a lower layer (In Section 4.4.6.3, ARIB STD-T75 discloses where the layer 7 shall inquire about the state for transmission in layer 2. Layer 7 will transmit data or wait depending on the status of layer 2. Also see fig. 4.4.6.3 “Data with priority transfer sequence”).

As per claim 13, ARIB STD-T75 teaches the roadside-to-vehicle communication system according to claim 11, wherein, when the transaction management entity of the receiving station receives the final data segment of the divided message the transaction management entity of the receiving station notifies the transaction management entity of the sending station of the sequential number of undelivered data segments (In Section 4.3.3.5.2.1.2.1, ARIB STD-T75 discloses a retransmission procedure, in which a transmitting station does not receive an ACK from the receiving station. In such a process, the retransmission is carried out for the sequence number affixed to the fragmented segments. The retransmission is carried out until the ACK for the last fragment has been received),

and the transaction management entity of the sending station resends the undelivered data segments only (In Section 4.3.3.5.2.1.2.1, ARIB STD-T75 discloses a retransmission procedure, in which a transmitting station does not receive an ACK from the receiving station. In such a process, the retransmission is carried out for the sequence number affixed to the fragmented

Application/Control Number: 10568346

Art Unit: 4144

segments. The retransmission is carried out until the ACK for the last fragment has been received).

As per claim 14, ARIB STD-T75 teaches the roadside-to-vehicle communication system according to claim 8, wherein, when the identifier, in a received data segment, for identifying units of a transaction is identical to the identifier of data segments that have been already received (In Section 4.3.3.5.2.1.1, ARIB STD-T75 discloses where sequence numbers of received data are compared in order to determine if a message has been duplicated. In the case where the message is found to be duplicated, the message is discarded.),

the transaction management entity handles that received data segment as a data segment whose identifier is identical to that of the data segments that have been already received (In Section 4.3.3.5.2.1.1, ARIB STD-T75 discloses where sequence numbers of received data are compared in order to determine if a message has been duplicated. In the case where the message is found to be duplicated, the message is discarded).

As per claim 15, ARIB STD-T75 teaches the roadside-to-vehicle communication system according to claim 11, wherein, when the identifier, in a received data segment, for identifying units of a transaction is identical to the identifier of data segments that have been already received (In Section 4.3.3.5.2.1.1, ARIB STD-T75 discloses where sequence numbers of received data are compared in order to determine if a message has been duplicated. In the case where the message is found to be duplicated, the message is discarded.),

the transaction management entity handles that received data segment as a data segment whose identifier is identical to that of the data segments that have been already received (In Section 4.3.3.5.2.1.1, ARIB STD-T75 discloses where sequence numbers of received data are

Application/Control Number: 10568346

Art Unit: 4144

compared in order to determine if a message has been duplicated. In the case where the message is found to be duplicated, the message is discarded.).

As per claim 16, ARIB STD-T75 discloses the roadside-to-vehicle communication system according to claim 11, wherein the transaction management entity has an area for assembling divided segments into a message; designated by an application (In Section 4.3.1.2.1, ARIB STD-T75 discloses where the MAC Sub-layer is responsible for fragmenting and de-fragmenting data. Note that in section 4.4.4.1, ARIB discloses that the layer 7 management entity consists of providing the layer 7 and layer 2 (where the MAC Sub-layer resides) in both entities with communication control information necessary for communication and administration of the communication system. Thus, the application layer designates the layer 2 to carry out fragmenting/de-fragmenting in the MAC sub-layer in order to administer communication).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor

Application/Control Number: 10568346

Art Unit: 4144

and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 2-3, and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Non-Patent Literature ARIB STD-T75 and further in view of “RFC 793-Transmission Control Protocol” (hereinafter referred to as “RFC 793”) published by the Network Working Group.

As per Claim 2, the ARIB STD-T75 teaches the roadside-to-vehicle communication system according to claim 1.

Although the ARIB STD-T75 discloses a transfer service processing entity (Road Side Equipment, Sections 2.1.1 – 2.1.3) as well as suggest that Layers 3-6 (note that layer 4 is the transport layer which incorporates port numbers) are to be specified only if they are needed for the system (Section 1.3),

The reference is silent on the claim language utilizes port numbers in order to identify the plurality of applications

However, RFC 793 teaches in Section 2.7 that in order to identify separate data streams that a TCP may handle, the TCP provides a port identifier.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention, to modify the system of ARIB-T75 by using port numbers to identify a plurality of applications, as suggested by RFC 793. The suggestion for the modification is because the volume of communication between base stations and mobile stations may become

Application/Control Number: 10568346

Art Unit: 4144

overwhelmingly large. This modification would benefit the system of ARIB STD-T75 by improving the reliability and efficiency of transmission and communication between mobile and base stations.

As per claim 3, the combination of ARIB STD-T75 and RFC 793 teach the roadside-to-vehicle communication system according to claim 2. Furthermore the combination teaches wherein a reservation port that is globally unique (In Sections 2.7, RFC 793 discloses that Well-known sockets are used for associating a socket address with a standard service. For instance, the "Telnet-Server" process is permanently assigned to a particular socket. Note that the RFC 793 defines a socket as an address which specifically includes a port identifier. See glossary for definition.)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention, to modify the system of ARIB-T75 by using globally unique port numbers to identify a specific service, as suggested by RFC 793. The suggestion for the modification is because the volume of communication between base stations and mobile stations may become overwhelmingly large. This modification would benefit the system of ARIB STD-T75 by improving the reliability and efficiency of transmission and communication between mobile and base stations.

and an arbitrary port that is locally unique are utilized as the port numbers for identifying applications (Section 2.7, RFC 793 discloses that a connection is fully specified by the pair of sockets at the ends. A local socket may participate in many connections to different foreign

Application/Control Number: 10568346

Art Unit: 4144

sockets. A connection is specified in the OPEN call by the local port and foreign socket arguments.)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention, to modify the system of ARIB-T75 by using local port numbers to identify a plurality of applications, as suggested by RFC 793. The suggestion for the modification is because the volume of communication between base stations and mobile stations may become overwhelmingly large. This modification would benefit the system of ARIB STD-T75 by improving the reliability and efficiency of transmission and communication between mobile and base stations.

As per claim 5, the combination of ARIB STD-T75 and RFC 793 teach the roadside-to-vehicle communication system according to claim 3.

Furthermore, the combination teaches wherein, upon initial setup, the transfer service processing entity notifies an opposite station of port numbers for identifying applications of the station to which the transfer service processing entity belongs (In Section 3.4, RFC 793 discloses a hand-shake procedure in order to establish an initial connection. In the procedure, there is disclosed wherein TCP_B (which can be a mobile or base station) is in the listen state while it waits for a connection request and port identifier from TCP_A (which can be a mobile or base station). Thus, RFC 793 teaches where a station notifies an opposite station of port numbers in order to establish and identify applications of the station).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention, to modify the system of ARIB-T75 by using port numbers to identify a plurality of

Application/Control Number: 10568346

Art Unit: 4144

applications, as suggested by RFC 793. The suggestion for the modification is because the volume of communication between base stations and mobile stations may become overwhelmingly large. This modification would benefit the system of ARIB STD-T75 by improving the reliability and efficiency of transmission and communication between mobile and base stations.

As per claim 6, the combination of ARIB STD-T75 and RFC 793 teach the roadside-to-vehicle communication system according to claim 5.

Furthermore, ARIB STD-T75 teaches wherein the transfer service processing entity and the transaction management entity enable an initial setup procedure to be omitted (In section 2.5.2, the ARIB STD-T75 discloses where a mobile station registers to a base station, during the initial connection process, it is further disclosed where there is a simplified connection process by which the communication phase is commenced directly and, hence, omitting the phase of service establishment).

Conclusion

6. Prior arts made of record, not relied upon:

US 6,597,278 to Ando discloses Mobile communication having link ID code checking function

US 6,081,718 to Ando et al. discloses vehicle communication system for toll collection

US 6,829,531 to Lee et al. discloses a system and method for providing channel information of roadside unit

US 5,424,727 to Shieh discloses a method and system for two-way packet radio-based electronic toll collection

Application/Control Number: 10568346

Art Unit: 4144

US 6, 791,475 to Yamashita discloses non-stop toll collection method and system

NON-Patent Literature “DSRC in Japan, Status Report” published by the DSRC International Task Force, ITS Info-communications Forum on December 2002.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yosief Berhane whose telephone number is (571) 274-7164. The examiner can normally be reached at 7:30-5:00 Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Taghi T. Arani can be reached at (571) 272-3787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Y.B/

/Taghi T. Arani/

Supervisory Patent Examiner, Art Unit 4144